

TYPHOON VIRGINIA

Virginia developed during July as the third typhoon of the 1978 season. Virginia was relatively small compared to the much larger Typhoon Wendy which developed simultaneously to the west. Except for an unexpected loop, Virginia's track was definable as an uncomplicated, broad recurvature track. However, higher than average forecast errors resulted due to the difficult forecasting situations produced by complex interactions with the nearby Typhoon Wendy and the Tropical Upper Tropospheric Trough (TUTT).

Virginia first appeared as a small tropical disturbance on satellite imagery on 21 July. This disturbance was believed to be associated with a low-level convergence zone feeding into a much larger disturbance which was developing over the Philippine Sea. There were no nearby land/ship reports to indicate any evidence of a surface circulation at this time. Therefore, this disturbance was discussed in the Significant Tropical Weather Advisory (ABEH PGW) as having poor potential for development during the advisory period. On the 23rd, a weather reconnaissance aircraft was first sent to investigate the larger disturbance (then estimated at 30 kt (15 m/sec) intensity) and was later sent east into the smaller disturbance. The aircraft penetrated the smaller disturbance and found an unexpected, well-developed circulation. Aircraft radar showed a well-defined 40 nm (74 km) diameter eye and the weather officer estimated surface gusts at 55 kt (28 m/sec). The first tropical cyclone warning was immediately issued on TS Virginia at 230600Z. Post analysis showed tropical storm stage was reached 6 to 12 hours before the first warning. However, the lack of significant data and Virginia's unusually small cloud signature on satellite imagery delayed earlier interpretation of Virginia as a significant tropical cyclone.

Virginia and Wendy intensified simultaneously (Fig. 3-6). Because Wendy's circulation was so much larger, Virginia was expected to travel in a counter-clockwise direction

about Wendy. Virginia did travel as predicted for the first four days, but the speed of movement was slower than expected. During the next two days, Wendy moved northwestward away from Virginia and interaction between the two storms became less noticeable. Virginia continued to decrease in speed of movement and then executed a loop; Wendy and Virginia were separated by over 800 nm (1482 km) during the loop.

Macro-scale features over the western North Pacific at this time included a TUTT. The TUTT was initially situated between Virginia and Japan. Analysis of all data sources, including satellite-derived winds, indicated the TUTT extended southward along Virginia's western side during the loop. This caused inconsistent steering flow with height, contributing to Virginia's lack of significant forward movement. Virginia's maximum intensity of 70 kt (36 m/sec) was attained during this period (Fig. 3-7).

Virginia slowly weakened after the loop as the TUTT axis became situated just west of Virginia and restricted upper-level outflow to the west. Virginia also began moving toward recurvature by traveling around the western periphery of a large subtropical anticyclone. Virginia's recurvature was also believed to be partially aided by the TUTT, which provided southerly upper-level steering flow. Virginia remained just east of the TUTT axis throughout recurvature.

Virginia produced no known damage. Even though Virginia passed within 80 nm (148 km) of Japan, only 20 kt (10 m/sec) maximum surface winds were reported along the east coast of Honshu. Besides Virginia's small size, the winds were always weaker on the west side due to the TUTT axis being so close to the storm.

Virginia holds the 1978 record for a tropical cyclone tracking the farthest north (47N) before losing its tropical characteristics.

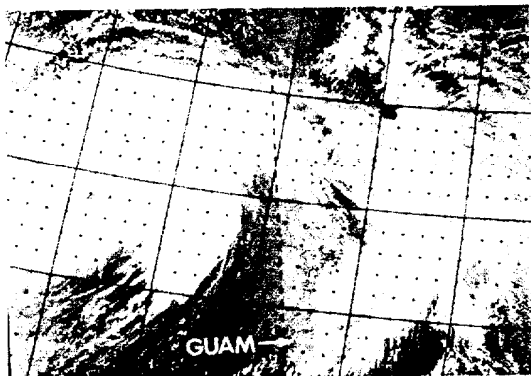


FIGURE 3-6. Early stages of Typhoons Wendy (left) and Virginia (right), 26 July 1978, 0133Z. (DMSP imagery)

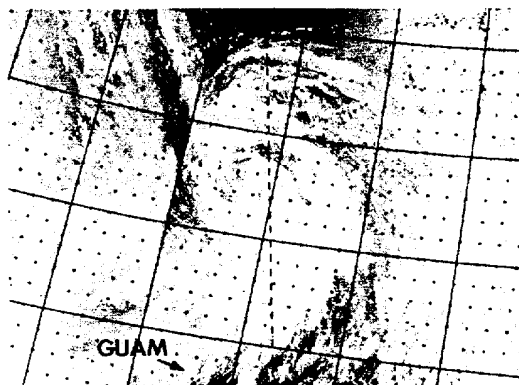


FIGURE 3-7. Typhoon Virginia at maximum intensity of 70 kt (36 m/sec) while undergoing strong TUTT interaction, 28 July 1978, 2141Z. (DMSP imagery)